REMARKS

Introduction

Claims 1-21 are pending in the present application, of which Claims 1, 10, and 16 are independent. In the Office Action, the Examiner rejects Claims 1-9 and 12 under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1 and 4 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,177,048, issued to Lagerstedt (hereinafter "Lagerstedt"). Further, Claims 10, 15, and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,958,486, issued to Ringdahl et al. (hereinafter "Ringdahl"). In addition, Claims 1, 2, 4-13, and 15-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,283,033, issued to Dodrill (hereinafter "Dodrill"), in view of Lagerstedt. Also, Claims 3 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dodrill in further view of U.S. Patent No. 4,667,454, issued to McHenry et al. (hereinafter "McHenry").

Claim Amendments

Claims 1, 5, 10, 16, and 17 are presently amended to further distinguish the present invention from the cited references. Claims 6 and 12 are cancelled.

Claim Rejections Under 35 U.S.C. § 112

Claims 1-9 and 12 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically, the Examiner asserts that the claim limitation "at least a portion" is unclear with regard to what constitutes a portion of the cooling phase of sterilization. Claims 6 and 9 are presently canceled. With regard to Claims 1-5 and 7-9, applicant respectfully submits that the limitation "at least a portion" is sufficiently clear when read in the context of the entire application. The present application is directed to a method of processing a food product in a closed environment, such as a conventional retort

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vessel. This method comprises a come-up phase, a cooking phase, and a cooling phase, each of which is shown in FIGURES 1 and 2. The phases are described in terms of pressure and temperature changes over time during the processing cycle. Accordingly, it is clear that "at least a portion" of the cooling phase is one or more periods of time, of any duration, that occur during the cooling phase. This is consistent with the Examiner's interpretation of "a portion" to include any instance of the cooling phase of the sterilization process. For at least this reason, applicant respectfully submits that Claims 1-5 and 7-9 are sufficiently definite to comply with the requirements of 35 U.S.C. § 112, second paragraph.

Claims Rejected Under 35 U.S.C. § 102 (Lagerstedt)

Claims 1 and 4 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Lagerstedt. Briefly, Lagerstedt relates to a method of sterilizing fiber-based containers filled with a food product (Col. 2, lines 30-32). The containers are exposed to environments requiring good sealing properties against moisture and liquid (Col. 3, lines 48-50). Above a certain critical temperature, the materials of which the containers are made cannot completely withstand the negative effect of the water on the mechanical properties of the package material (Col. 3, lines 50-53). During sterilization, the temperature of the autoclave is allowed to rise to the autoclaving temperature suitable for the application, and the temperature is maintained during a sufficient holding time (Col. 3, lines 60-64). Then the container is cooled with a medium that does not contain water, and is preferably air, down to the critical temperature, at which temperature the medium is exchanged for water (Col. 3, lines 64-67).

As presently amended, Claim 1 recites a method of processing a food product in a retort vessel. The method comprises "placing the food product in a container having a fiber-based material component and sealing the container closed, the container having at least one exposed edge of paperboard." The method further comprises "placing the closed container in the vessel

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and cooking the food product therein including regulating the interior conditions of the vessel using a control temperature and a control pressure" and "cooling the food product within the vessel." Cooling the food product includes "reducing the control temperature within the vessel according to a predefined temperature schedule and reducing the control pressure within the vessel according to a predefined pressure schedule; at least a portion of the pressure schedule having a control pressure less than the theoretical pressure resulting from the temperature schedule."

In the Office Action, the Examiner states that "Lagerstedt discloses lowering the temperature to a value greater than 70°C, which is thus a predefined schedule." The Examiner further asserts that "by the ideal gas law, pressure is dependent on temperature, a pressure schedule is also intrinsically present when using a temperature schedule. Nonetheless, in determining to lower the temperature to a value greater than 70°C, Lagerstedt is also disclosing a specified pressure."

As presently amended, Claim 1 recites a predefined pressure schedule, "at least a portion of the pressure schedule having a control pressure less than the theoretical pressure resulting from the temperature schedule." As a result, the recited pressure schedule may not be derived from the temperature schedule and the ideal gas law. Therefore, the pressure schedule recited in Claim 1 is not "intrinsically present" in the recited temperature schedule, as interpreted by the Examiner. Accordingly, because Lagerstedt does not teach or suggest a predefined pressure schedule, "at least a portion of the pressure schedule having a control pressure less than the theoretical pressure resulting from the temperature schedule," Lagerstedt may not properly serve as the basis for a rejection of Claim 1 under 35 U.S.C. § 102(b).

For at least the foregoing reasons, applicant respectfully submits that Claim 1, as presently amended, is allowable over Lagerstedt. Further, if Claim 1 is allowed, then Claim 4, which depends therefrom, should also be allowed.

Claims Rejected Under 35 U.S.C. § 102(b) (Ringdahl)

Claims 10, 15, and 16 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ringdahl. Ringdahl is directed to a container made from a laminate material and a method for treating the same. Referring to Figure 1, the base layer 1 in a container according to Ringdahl preferably consists of a material which can be cardboard, paper, polypropylene, foamed polypropylene, filled polypropylene (e.g. with chalk), polyester, amorphous polyester, filled polyester or filled amorphous polyester, the polyester for example being polyethylene terephtalate (Col. 4, lines 25-31). Still referring to Figure 1, in order to withstand the harsh environment of autoclaving, the laminate material further comprises coatings 2 and 3, which are designed to be heat resistant and to have good vapor barriers (Col. 4, lines 36-39). The packaging laminate preferably also includes a barrier layer 4 arranged between the base layer 1 and the inner coating 3, wherein the barrier layer 4 can consist of aluminum, a silica coating, ethylene/vinyl alcohol, polyvinyl alcohol, metallized (usually with aluminum) oriented polypropylene, an aluminum oxide coating or metallized (usually with aluminum) oriented polyester, the polyester for example being polyethylene terephtalate (Col. 4, lines 53-62). The packaging laminate can also include a layer 5 arranged between the base layer and the outer coating 2, wherein the layer 5 can consist of polypropylene, low density polyethylene, medium density polyethylene, high density polyethylene or amorphous polyester, the polyester for example being polyethylene terephtalate (Col. 4, lines 33-col. 5, line 2).

A closed container manufactured from the packaging laminate disclosed by Ringdahl can be heat treated in an autoclave (Col. 3, lines 57-61). The heat treating process can be divided

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into a rise time, a holding time, and a cooling time (Col. 3, lines 44-46). A slight deformation of the laminate will be achieved during the holding time, which results in the plane surfaces of the container obtaining a more or less substantial concavity (Col. 3, lines 57-61). The concavity of the container can be varied and retained by applying a supporting pressure to the container during the cooling time of the preservation process (Col. 3, lines 62-64). A supporting pressure is a pressure within the autoclaving vessel, which during the cooling time is of the magnitude of up to one bar more than that in the closed container with filling material (Col. 3, line 67 through Col. 4, line 3). The supporting pressure is maintained until the plastic with memory has set, which usually takes place at about 100°C (Col. 4, lines 3-5). After the holding time, during which the desired temperature is kept constant, the pressure in the autoclave is lowered to the normal atmospheric pressure. During the cooling time, the temperature is lowered by means of cooling of the autoclave (Col. 3, lines 51-56).

As presently amended, Claim 10 recites "a method of batch processing a food product located in a closed container having a paperboard material component." The method comprises "conducting a cooking phase within the vessel" and "conducting a cooling phase within the vessel, during which the temperature within the vessel is reduced." Claim 10 further recites that "at least a portion of the cooling phase includes controlling the pressure within the vessel so that the pressure in the vessel is less than the pressure in the paperboard material." This limitation stands in direct contrast to the teachings of Ringdahl, which teaches applying a "supporting pressure" to the vessel during the cool down period in order to maintain a concave surface on the container. Accordingly, not only does Ringdahl not teach or suggest every limitation recited in Claim 10, Ringdahl actually teaches away from the limitations of Claim 10 as amended.

Claim 16, as currently amended, recites "a method of processing a fiber-based container containing a food product, the method including placing the container in a retort vessel,

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conducting a cooking phase within the vessel, and conducting a cooling phase within the vessel." The claim further recites "an improvement to conducting the cooling phase comprising: actively controlling the vessel pressure to a value less than the value of the pressure in the walls of the fiber-based container during at least a portion of the cooling phase." As previously discussed with regard to Claim 10, Ringdahl does not teach or suggest "controlling the vessel pressure to a value less than a value of the pressure in the walls of the fiber-based container during at least a portion of the cooling phase." Instead, Ringdahl teaches maintaining the concavity of a container surface by supplying a supporting pressure within the autoclaving vessel during the cooling time, wherein the supporting pressure is of the magnitude of up to one bar more than that in the closed container with filling material. Thus, as with Claim 10, Ringdahl does not teach or suggest every limitation of Claim 16, and actually teaches away from this limitation of Claim 16.

For at least the foregoing reasons, applicant respectfully submits that Claims 10 and 16 are in condition for allowance. Further, if Claim 10 is allowed, then Claim 15, which depends therefrom, should also be allowed.

Rejections Under 35 U.S.C. § 103 (Dodrill and Lagerstedt)

Claims 1, 2, 4-13, and 15-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dodrill in view of Lagerstedt. Claims 6 and 12 are presently cancelled. With regard to the remaining claims, Dodrill teaches a process for sterilizing the contents of a sealed deformable package. The process for sterilizing the contents of a sealed deformable package containing air or head space comprises heating the sealed deformable package inside a sealed processing tank (Col. 5, lines 21-24). During a "come-up" phase, a heating medium is heated to a predetermined sterilization temperature, and the pressure in the processing tank is maintained at a pressure equal to or about the sum of the partial pressure of air and partial saturated water vapor pressure inside the package (Col. 5, lines 26-30).

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After the package and its contents have reached the predetermined sterilization temperature, the pressure inside the process tank is maintained equal to or about the sum of the partial pressure of air and the partial saturated water vapor pressure inside the package (Col. 5, lines 53-68). After the contents and the package have been maintained at the sterilization temperature for a predetermined period of time, both the package and its contents are cooled (Col. 5, lines 65-68). During this "come-down" phase, the pressure inside the processing tank is maintained at or about the sum of the partial pressures of the air and the partial saturated water vapor pressure inside the package (Col. 5, line 68 through Col. 6, line 4). The partial pressure of air is calculated using the ideal gas law at the average temperature of the head space, and the partial saturated water vapor pressure is calculated at the lowest temperature inside the package (Col. 6, line 4 through line 9). As a result, when the contents of the container are cooled, the current pressure inside the processing vessel is maintained at a value substantially equal to the current sum of two pressure components within the container, wherein "substantially equal" pressure in the processing vessel and within the package is considered to have been achieved when these two pressures are maintained near enough together to prevent the container from irreversibly collapsing or expanding (Col. 7, lines 56-60; Col. 6, lines 38-42). Thus, the Examiner relies on Dodrill to teach every feature of the rejected claims except the use of a paperboard container to contain the food product. The Examiner relies on Lagerstedt to teach the use of a paperboard container in a food sterilization process.

The cooling step recited in Claim 1 includes "reducing the control temperature within the vessel according to a predefined temperature schedule and reducing the control pressure within the vessel according to a predefined pressure schedule; at least a portion of the pressure schedule having a control pressure less than the theoretical pressure resulting from the temperature schedule." Dodrill does not teach "at least a portion of the pressure schedule having a control

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pressure less than the theoretical pressure resulting from the temperature schedule." Instead, Dodrill teaches maintaining the current pressure inside the processing vessel at a value substantially equal to the current sum of two pressure components within the container, wherein "substantially equal" pressure is considered to have been achieved when the two pressures are maintained near enough together to prevent the container from irreversibly collapsing or expanding. Thus, the purpose of following the pressure schedule taught by Dodrill is to maintain the shape of the container, not to prevent ingress of water into the container material. Therefore, Dodrill is not concerned with whether the pressure in the vessel is greater or less than the pressure in the vessel. Instead, Dodrill is concerned that the difference, positive or negative, between the two pressures is within certain limits so that the container is not permanently deformed. Accordingly, Dodrill would not be motivated to ensure that "at least a portion of the pressure schedule [has] a control pressure less than the theoretical pressure resulting from the temperature schedule," as recited by Claim 1.

As previously discussed, Lagerstedt does not teach or suggest "at least a portion of the pressure schedule having a control pressure less than the theoretical pressure resulting from the temperature schedule." Accordingly, even a theoretical combination of Dodrill and Lagerstedt would not teach or suggest every limitation recited in Claim 1. For at least this reason, applicant respectfully submits that Claim 1 is allowable over a theoretical combination of Dodrill and Lagerstedt.

Similar to Claim 1, Claim 10 recites "at least a portion of the cooling phase includes controlling the pressure within the vessel so that the pressure in the vessel is less than the pressure in the paperboard material, thereby helping to prevent moisture from entering into the paperboard of the container." As previously discussed with regard to Claim 1, neither Dodrill nor Lagerstedt teaches or suggests a cooling phase wherein "at least a portion of the cooling

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phase includes controlling the pressure within the vessel so that the pressure in the vessel is less than the pressure in the paperboard material." Accordingly, even a theoretical combination of Dodrill and Lagerstedt does not teach or suggest each and every limitation of Claim 10 as presently amended.

Claim 16 recites a method of processing a fiber-based container containing a food product, the method including "controlling the vessel pressure to a value less than pressure in the walls of the fiber-based container during at least a portion of the cooling phase." Neither Dodrill nor Lagerstedt teaches or suggests "actively controlling the vessel pressure to a value less than pressure in the walls of the fiber-based container during at least a portion of the cooling phase." Consequently, even a theoretical combination of Dodrill and Lagerstedt would not teach each and every limitation of Claim 16.

For at least the foregoing reasons, applicant respectfully submits that even a theoretical combination of Dodrill and Lagerstedt does not teach or suggest each and every limitation recited in Claims 1, 10, or 16. Accordingly, applicant respectfully submits that Claims 1, 10, and 16 are allowable as presently amended. Further, if Claims 1, 10, and 16 are allowed, then Claims 2, 4, 5, 7-9, 11, 13, 15, and 17-21, which depend therefrom, should also be allowed.

Rejected Claims Under 35 U.S.C. § 103(a) (Dodrill and McHenry)

Claims 3 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dodrill in view of McHenry. In the Office Action, the Examiner relies on Dodrill to disclose a process for sterilizing the contents of a sealed deformable package. The Examiner further relies on McHenry to disclose a method of sterilizing a food product within a deformable container wherein the sterilization process incorporates agitation of the heated containers and subsequent contents of said heated containers for the purpose of more uniformly contacting the food product with the side walls and bottom wall. Claim 3 depends from Claim 1, and thus recites the

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limitation that "at least a portion of the pressure schedule having a control pressure less than the theoretical pressure resulting from the temperature schedule." Similarly, Claim 14 depends from Claim 10, and thus recites the limitation that "at least a portion of the cooling phase includes controlling the pressure within the vessel so that the pressure in the vessel is less than the pressure in the paperboard material." As discussed above, Dodrill does not teach or suggest either of these limitations. McHenry does not teach or suggest either of these limitations either. Accordingly, even a theoretical combination of Dodrill and McHenry would not teach or suggest every limitation recited by Claims 3 or 14. For at least this reason, applicant respectfully submits that Claims 3 and 14 are allowable over a theoretical combination of Dodrill and McHenry.

Conclusion

For at least the foregoing reasons, applicant respectfully submits that Claims 1, 10, and 16 should be allowed as presently amended. Further, Claims 2-5, 7-9, 11, 13-15, and 17-21, which depend from Claims 1, 10 and 16, should also be allowed. An early and favorable action issuing these claims is respectfully solicited. If the Examiner has any questions, the Examiner is invited to contact the undersigned by telephone at 206.695.1705.

Respectfully submitted,

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